7-31-2008

The Role of Perceived Social Support and Cognitive Processing in Reports of Personal Growth Following Bereavement

Sean M. Engelkemeyer
University of Missouri-St. Louis, sme257@umsl.edu

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Sean M. Engelkemeyer

M.A., Psychology, University of Missouri – St. Louis, 2004

A Dissertation submitted to the Graduate School at the University of Missouri – St. Louis

in partial fulfillment of the requirements for the degree

Doctor of Philosophy in Psychology

July, 2008

Advisory Committee

Ann Steffen, Ph.D.
Chairperson

Samuel J. Marwit, Ph.D.
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Laurie Greco, Ph.D.

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Abstract

The current study tests models of personal growth in bereaved individuals (Hogan & Schmidt, 2002; Tedeschi & Calhoun, 2004) by examining the relationships between types of social support and growth following bereavement, as well as by assessing whether deliberate/reflective or automatic/intrusive cognitive processing of the loss mediates the relationship between social support and growth in sample of bereaved adults. A sample of 114 participants who had experienced the death of an immediate family member (spouse, child, parent, or sibling) within the past three years completed a series of self-report measures received by mail. Hypotheses that perceived emotional and advice/ guidance support, social support satisfaction, and network size positively correlate with growth were confirmed, such that each social support variable demonstrated a positive correlation with personal growth. Cognitive processing variables differed substantially in their relationships with growth. Consistent with hypotheses, positive reinterpretation coping had a significant positive relationship with growth, whereas intrusive thoughts were negatively related to growth. Contrary to hypotheses, personal reflection was unrelated to growth. Type of death, time since death, and other demographic characteristics did not demonstrate relationships with personal growth. Using hierarchical multiple regression and the Sobel test of indirect effects, no evidence for the role of mediation for cognitive processing variables between social support and growth was discovered in the current study, after accounting for grief symptoms. Methodological limitations and differences with prior studies may account for lack of mediation effect in the current study. Partial support for the "Grief to personal growth

model" (Hogan & Schmidt, 2002) and the "Posttraumatic Growth model" (Tedeschi & Calhoun, 2004) was provided by the current study.

The Role of Perceived Social Support and Cognitive Processing In Reports of Personal Growth Following Bereavement

Bereavement, by its nature, involves social relationships. The loss of a loved one does not tend to occur within a vacuum, but rather creates waves that impact many surviving relationships. In response to the stressor of bereavement, some relationships increase in strength; others are stretched until they break.

While much research emphasis is placed upon the physical and psychological functioning of the bereaved individual following the loss of a loved one, investigators too often have neglected the wider social context within which bereavement occurs. When we experience the loss of a loved one, such as a spouse or a parent or a child, we often turn to our surviving family members, friends, and others for support and assistance in coping with such a dramatic change in our world. That support, whether solicited or provided without request, often provides valuable assistance to the bereaved individual that can facilitate adjustment to the loss, integration of the loss into one's personal narrative (Neimeyer, 2001), and even production of positive outcomes (Hogan & Schmidt, 2002; Joseph & Linley, 2005; Schaefer & Moos, 2001; Tedeschi & Calhoun, 2004). As demonstrated within the context of research, constructs of social support have indeed emerged as significant predictors of the course of grieving, health outcomes, and successful coping following bereavement and other stressful life events (see Cohen, Gottlieb, & Underwood, 2000, for a review). Initial evidence also substantiates the role of social support in the development of perceived positive outcomes corresponding to the struggle with loss (Calhoun & Tedeschi, 2001).

Researchers have attempted to explain the role of social support in outcomes following stressful life situations, incorporating diverse research traditions including social cognition, stress appraisal, symbolic interactionism, and interpersonal relationship perspectives (see Lakey & Cohen, 2000, for a review). These traditions tend to support the notion of a protective effect of social support from distress and other negative outcomes following adverse life events such as bereavement (Cobb, 1976; Cohen & Wills, 1985). Further review of the evidence supporting the protective effect in bereaved populations is beyond the scope of this paper (for a review of this research, consult Stroebe, Stroebe, Abakoumkin, & Schut, 1996). However, it is important to note that many of these traditions rely heavily upon cognitive processes (e.g. influencing stress appraisal, bolstering self-esteem and/or self-efficacy, altering beliefs about personal control, and enhancing personal identity) as hypothesized mediators of the relationship between social support and post-bereavement outcomes. Similar cognitive processes have begun to appear within models of the development of personal growth as well (e.g. Tedeschi & Calhoun, 2004).

Unfortunately, the theoretical traditions mentioned above have not expanded their conceptualizations to include discussion of the mechanisms for development of positive outcomes and the potential for growth following these events. Existing theoretical models of social support and personal growth following bereavement tend to suggest that social support facilitates cognitive coping processes, including deliberate cognitive reflection and automatic intrusive thoughts regarding the loss, which in turn facilitate the perception of growth outcomes following the death of a loved one (Hogan & Schmidt, 2002; Joseph & Linley, 2005; Tedeschi and Calhoun, 2004). Unlike research regarding

the stress-buffering role of social support in bereaved populations, research examining the mediating variables involved in growth-facilitating effects of social support is essentially non-existent. Further examination of the relationships between these constructs in the proposed models of personal growth is warranted in order to confirm and/or modify our existing understanding of the relationship between social support and growth.

Social Support: A Multifaceted Construct

Following bereavement, social support from others may take many forms, and different characteristics of support may contribute to its positive effects on psychological and health outcomes in the bereaved. Due to the encompassing nature of the concept, defining social support in empirical studies has proven difficult for researchers but is essential prior to discussing its relationship with adjustment and other outcomes, such as personal growth. Vaux (1988) describes social support as a "metaconstruct" that encompasses multiple themes and activities including "belonging, bonding, and binding; attributes of groups, relationships, and persons; and processes that are social, behavioral, cognitive, and affective in nature (p. 33)." The measurable constructs of social support include, but are not limited to, characteristics of social networks (e.g. number of network supports), supportive behavior (received support), support appraisals (perceived support and support satisfaction), and types of assistance. Much bereavement research has not attempted to distinguish between the constructs that comprise "social support," resulting in competing conclusions and contradictory statements about the role of support. As a "metaconstruct," social support has a widely varied impact on bereavement outcomes, and studies of bereavement and coping processes should clarify the construct of social support that is of interest.

One of the most frequently studied support constructs is *perceived support*, which refers to the degree of belief that helpful support from others will be available if and when it is needed. Contrasted with *received support*, which is defined as the actual receipt of observable supportive actions or assistance by others, perceived support has been identified as a better predictor of adjustment following stressful life events (Helgeson, 1993; Sarason, Sarason, & Pierce, 1990; Wethington & Kessler, 1986). Conversely, the effects of received support have been more variable, as this type of support has demonstrated both positive and negative correlations with distress depending upon the context and outcome variables utilized in the study, and received support has been less likely to demonstrate relationships with outcome variables (see Cohen & Wills, 1985; Wills & Shinar, 2000). As it has demonstrated more consistent relationships with distress, adjustment, and health behaviors following stressful life circumstances, perceived support is often utilized as a research construct within bereavement research as well.

The construct of perceived support may be further divided into multiple support functions that are utilized by the bereaved. The term support function refers to a categorical description of the types of assistance or grouping of helping behaviors that serve a particular supportive function for the recipient. Researchers have been inconsistent when labeling support functions, making it difficult to compare these constructs across studies. Wills and Shinar (2000) offer a summary and classification of these types of support, which may be useful when comparing empirical results. For example, these authors consider *emotional support* to be a type of assistance that includes sympathetic listening, acceptance, and bolstering of self-esteem. Following bereavement, emotional support may take the form of a friend or family member expressing concern about emotional health, offering to listen to difficult feelings, or ”being there” for the

bereaved individual. A second type of support, *instrumental support*, may include the offer of practical help, such as structuring tasks and offering financial help. An example of instrumental support for an older widow would be for a family member to offer transportation to necessary appointments and errands. *Informational support* includes the provision of advice, problem solving, and identification of community resources. Following bereavement, an example of this type of support would be a health care provider referring a patient to a local bereavement support group. *Companionship support* occurs when others are available to share in social or physical activities. For example, a close friend might suggest going to a movie or initiating a joint exercise program to a bereaved spouse. Lastly, *validation*, or feedback support, provides an opportunity for social comparison through interactions within relationships. For example, a bereaved parent might normalize his or her feelings by discussing them with a spouse. Discussion of these variables as they relate to positive personal growth outcomes will be discussed later.

Another set of support constructs that has demonstrated a relationship with adjustment outcomes following bereavement are characteristics of the support network, such as network size or number of supportive others, network integration, or network embeddedness. Network integration and embededness refer to the degree to which an individual engages in different activities with multiple sources of support within their network. A large panel study of 3,000 adults demonstrated that, for those who experienced the death of a spouse during the course of the study, the higher the network embededness at Time 2, the lower their depressive symptoms at Time 3 (Norris & Murrell, 1990). Decrease in depression scores was not associated with a measure of perceived support in the same study. Although no studies have yet compared perceived support and network characteristics in their relationship to positive personal growth

outcomes, this study of bereaved adults indicates that both of these support constructs may relate differently to bereavement outcomes, including growth.

As described above, there are many ways to operationalize social support constructs for research purposes. Previous research has been variably effective in separating these constructs operationally, contributing to confused conclusions regarding the role of support. The current study focuses primarily upon the constructs of perceived support, network size, and support satisfaction as they relates to perceptions of personal growth within bereavement circumstances.

Available research examining types of perceived support following bereavement supports the notion that the effectiveness of different support behaviors will vary depending upon the situation. According to optimal matching theory (Cutrona, 1990), perceptions of the helpfulness of support behaviors will correspond to the fit between characteristics of the support and characteristics of the stressful situation. Optimal matching theory suggests that the types of support most beneficial for many stressful life situations may be different from the types of support that facilitate growth and other coping mechanisms specifically within bereavement circumstances. Researchers have examined support-specificity models with regard to adverse outcomes following bereavement (e.g. Deficit Model of Partner Loss; Stroebe & Stroebe, 1987), but not with models of personal growth. It is hypothesized that social support may also relate to personal growth in different ways depending upon the fit of the support to the characteristics of the situation (Joseph & Linley, 2005; Tedeschi & Calhoun, 2004). Research attempting to determine the types of support corresponding with positive outcomes and personal growth following bereavement is currently lacking.

Personal Growth Outcomes

Researchers have rarely focused upon personal growth as a potential outcome within bereavement and social support research. Much of social support and bereavement research spanning the past several decades has focused on explaining and reducing adverse outcomes of bereavement events. These adverse outcomes include lower self-esteem, psychological distress (Rubin & Malkinson, 2001), depression and anxiety (Rando, 1993), non-productive rumination (Davis, Nolen-Hoeksema, & Larson, 1998), negative changes in schematic assumptions about self-worth and the meaningfulness of the world (Janoff-Bulman, 1989; Kauffman, 2002), and symptoms of intrusive thoughts and avoidance of death related cues (Murphy, Johnson, & Lohan, 2002). However, this research utilizes a return-to-baseline model (O'Connor, 2002-2003), in which a stressful event leads to a negative outcome, and social support subsequently serves to reduce that negative impact or maintain prior functioning.

Reactions to bereavement, however, often include a transformation of being, in addition to negative sequelae, that incorporates positive outcomes (i.e. perceptions of personal growth) that exist over and above baseline functioning, or which may exist along a different continuum of functioning (O'Connor, 2002-2003; Yalom & Lieberman, 1991). Personal growth has been noted to occur following multiple types of traumatic and stressful events (O'Leary & Ickovics, 1995; Park, Cohen, & Murch, 1996; Taylor & Brown, 1988; Tedeschi & Calhoun, 1995; Tennen, Affleck, Urrows, Higgins, & Mendola, 1992), and has received special attention following bereavement due in part to the transformative nature of the loss of close, interpersonal relationships (Davis, Nolen-Hoeksema, & Larson, 1998; Hogan, Greenfield, & Schmidt, 2001; Calhoun & Tedeschi, 2001). Also due to the interpersonal nature of bereavement, it is believed that social

support is a crucial component associated with the development of personal growth, although there has been little research examining this relationship.

Models of Social Support and Personal Growth

Perhaps the most comprehensive model to date delineating the role of social support in the development of growth is Tedeschi and Calhoun's (2004) model of posttraumatic growth (PTG). Like models emphasizing the protective effects of social support, the PTG model draws from the social-cognitive tradition to explain outcomes of stressful events. In their model of posttraumatic growth, Tedeschi, Park, and Calhoun (1998) suggest a classification system for life domains that may be positively affected by trauma and loss including: appreciation for life, interpersonal relationships, personal strength, new possibilities, and spiritual/existential change.

According to these authors, the death of a loved one qualifies as a "traumatic event" because of its ability to alter basic cognitive assumptions about the vulnerability of ourselves and those we care about, self-worth, the uncontrollability of the world around us, trustworthiness of others, the meaningfulness of life, and the uncertainty of the future (Calhoun & Tedeschi, 2001; Janoff-Bulman, 1992; Parkes, 1971). These assumptions are categorized into belief structures or cognitive schemas that are believed to be relatively stable over time until a "traumatic event" such as bereavement presents the individual with significant disparate information. The PTG model (Tedeschi & Calhoun, 2004) identifies these changes in world assumptions as a common initial cognitive reaction to the loss. These changes are dependent, in part, upon characteristics of the traumatic event and upon preexisting personality characteristics. These changes are accompanied by other cognitive events including intrusive thoughts of the loved one and rumination about negative emotions, as well as emotional distress noted elsewhere in

the bereavement literature including depressed mood, anxiety, and other grief reactions (Rando, 1993; Rubin & Malkinson, 2001).

Tedeschi and Calhoun (2004) suggest that social support becomes an integral component in the facilitation of growth outcomes following initial distress reactions. Specifically, social support is believed to facilitate growth by initiating and maintaining a second type of event-related cognitive processing (also called resolution-focused cognitive processing, Nolen-Hoeksema & Davis, 2004) that is distinct from earlier intrusive thinking about the loss or trauma. The authors' definition of this cognitive coping process relies upon Martin and Tesser's (1996) conceptualization of cognitive processing as deliberate, recurrent thinking about the discrepancy between previous cognitive schema/life goals and current assumptions and goals following a challenging life event. The goal of this event-related processing is hypothesized to be an attempt to ascribe meaning to the major life event.

Tedeschi and Calhoun (2004) believe that social support initiates this type of cognitive processing in several ways. First, the provision of certain types of support (e.g. emotional/empathic support) may reinforce feelings of acceptance of circumstances of the death and may promote constructive discussions of the loss with the bereaved. Empathic acceptance of the statements and feelings of the bereaved individual by others may then contribute to deliberate processing of new information that becomes salient to the bereaved individual following loss. Second, interaction with supportive others might facilitate the "transmission" of new schemas and assumptions about the world and one's place within it (e.g. advice or guidance support) that allow the individual to incorporate the event into existing belief and meaning structures (p. 12). It is likely that these two functions of social support are not mutually exclusive, in that emotional support may facilitate the bereaved to become more open to new schemas as well as to cognitively

process information presented by the supportive other. It is also proposed that possessing experiential similarity (i.e. the supportive other has experienced a similar bereavement circumstance) may increase feelings of empathic acceptance and openness to new ways of viewing the situation. The authors hypothesize that the potential pathways of empathic acceptance and transmission of schemas facilitates cognitive processing that then allows the bereaved individual to perceive positive outcomes, including personal growth, following loss.

While Tedeschi and Calhoun's (2004) model of growth is perhaps the most comprehensive model of personal growth to date, other researchers have posited a relationship between perceived social support, cognitive processing, and personal growth as well. A second descriptive model of growth processes, called the "grief to personal growth model", suggests that cognitive processes and perceived social support (i.e. emotional/empathic support) are essential to the growth process (Hogan & Schmidt, 2002). Unlike Tedeschi and Calhoun's model (2004), however, the grief to personal growth model utilizes cognitive-behavioral models of posttraumatic stress (information-processing model; Horowitz, 1986) to argue that non-deliberate, intrusive thoughts are responsible for bringing a person closer to acknowledging growth outcomes. However, these authors do not specifically link social support and cognitive processing through explanation of mechanisms, and so they contribute little to the understanding of potential mediators of the social support and personal growth relationship. Although Tedeschi and Calhoun's (2004) model also suggests that intrusive thoughts may be present following a traumatic event, intrusive thoughts are not considered to be an essential variable in the pathway from social support to growth and are separate from other forms of cognitive processing.

A third model of growth processes, labeled the organismic valuing theory of growth through adversity (Joseph & Linley, 2005), attempts to incorporate social-cognitive, existential, and humanistic theories in order to expand on previously labeled growth processes. Similar to other models of growth, Joseph and Linley (2005) list social support as one of the major facilitating variables in this process. However, they note that previous attempts to operationalize social support have been atheoretical and vague, leading to contradicting findings regarding social support and growth. To circumvent this, these authors hypothesize a type of support that they believe to be most helpful to the facilitation of growth, specifically that growth is best facilitated by "the more specific provision of social environmental support for basic psychological needs of autonomy, competence, and relatedness (pp. 274)." According to their model, this type of social support will best facilitate the individual's natural pursuit of needs, values, and aspirations that will lead to growth. The model posits that humans strive naturally toward growth as part of an innate tendency to integrate new experiences and information through the cognitive processes of assimilation and accommodation. Phrased another way, humans strive to make meaning within their lives that incorporates information gained by significant life experiences. Horowitz labeled this innate process the "completion tendency" (1982, 1986). According to the theory, if the bereaved individual experiences incongruence between life goals and cognitive schema from pre- and post-trauma, then the individual may be driven to alter previous schemas (i.e. accommodate new information), thus facilitating growth. Alternatively, if the bereaved individual does not experience significant conflict with previous beliefs, then they will likely be able to assimilate the new information into existing cognitive structures that do not require major adjustments to their worldview. These authors hypothesize that social support facilitates

the process of accommodation through the support of autonomy and competence that enables such cognitive changes to occur.

Each of these models of growth outcomes following trauma and loss emphasize the role of both social support and cognitive processing in the development of growth. Each model suggests that high levels of perceived support help to facilitate growth outcomes. However, these models present some gaps and inconsistencies in their discussion of personal growth. For example, personal growth models differ in the types of support hypothesized to facilitate growth. Further specification regarding support functions would be helpful in delineating mechanisms for the development of growth. In addition, the models present different conceptualizations of the type of cognitive processing believed to facilitate growth outcomes. Specifically, Hogan and Schmidt (2002) suggest that automatic, intrusive thinking about the lost person and lost relationship linked to personal growth, while the other two models suggest that deliberate, reflective thinking is more related to growth outcomes. Further research examining these theoretical differences will be necessary to clarify individual differences in personal growth.

Empirical Support of Growth-Facilitative Models

Perceptions of positive changes, often labeled as posttraumatic growth or personal growth, have been noted by many individuals following bereavement (Engelkemeyer & Marwit, 2008) in the domains outlined by Tedeschi and Calhoun (1995). For example, within the domain of interpersonal relationships, bereaved parents have reported feeling closer to, and having a greater understanding of, their spouses and other bereaved parents (Tedeschi & Calhoun, 2004). Within the domains of personal strength and new possibilities, widows and widowers have reported greater facility with taking on new roles that were previously handled by a spouse (Lund, Caserta, Dimond, & Shaffer,

1989). Spirituality has also been reported to be more important to many individuals who experienced a significant death, as are a sense of one's priorities for life (Cait, 2004; Calhoun & Tedeschi, 2001). Perceptions of growth within each of these domains have been demonstrated in studies of bereaved parents (Engelkemeyer & Marwit, 2004; Polatinsky & Esprey, 2000), bereaved caregivers (Bower, Kemeny, Taylor, & Fahey, 1998; Cadell, Regehr, & Hemsworth, 2003), and groups including various bereavement circumstances (Davis, Nolen-Hoeksema, & Larson, 1998; Hogan & Schmidt, 2002; Kessler, 1987; Lehman, et al., 2003). Qualitative and anecdotal reports of perceptions of growth following loss have also been noted in the areas of interpersonal relationships (Helmrath & Steinitz, 1978; Miles & Crandall, 1983), existential growth [e.g. changed philosophy of life or increased spirituality (Janoff-Bulman, 1992; Klass, 1986-1987; Neimeyer, 2001; Talbot, 2002; Yalom & Lieberman, 1991)], and self-confidence and competence (Calhoun & Tedeschi, 1989-1990).

Focusing on the relationship between perceived support and perceptions of personal growth following a variety of stressful and traumatic life events, researchers have presented mixed evidence. For example, a study examining perceived availability of support and support satisfaction in a study of 256 college students discovered that measures of these support constructs taken at baseline significantly predicted a measure of stress-related growth six months later (Park, Cohen, & Murch, 1996). Conversely, other studies have not shown a relationship between support satisfaction and growth outcomes (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Sheikh, 2004). These mixed findings are due in part to varying definitions of perceived support, as well as differences in methodology. For example, the two studies that did not find a relationship were cross-sectional in design, while the study that found a relationship collected longitudinal data. In addition, each of the studies mentioned used brief measures of

social support that may not have reliably and validly captured the constructs of interest. Further, Sheikh (2004) used a non-validated selection of items from a measure of social support (support satisfaction items only) to predict growth, leading to problems with reliability and validity.

Research focusing on perceived support and positive outcomes following bereavement, specifically, also suffers from methodological problems, but has generally supported a relationship between perceived social support and growth (Hogan & Schmidt, 2002; Martinson & Campos, 1991). For example, Martinson and Campos (1991) interviewed 31 individuals who had lost a sibling due to cancer during adolescence, and determined that perceptions of family support were related to reports of personal and family growth. Several groups of researchers later used structural equation modeling with cross-sectional data to demonstrate that perceived social support is positively associated with perceptions of personal growth in a sample of 167 bereaved parents (Hogan and Schmidt; 2002) and 167 bereaved HIV/AIDS caregivers (Cadell, Regehr, & Hemsworth, 2003) several years after the loss. Considering that different types of support may yield different results within bereavement studies, it is necessary to cautiously interpret the results of prior research in this area, particularly in light of variation in the definitions of social support.

The Role of Cognitive Processing

Recent models of adaptive grieving following bereavement, including the more comprehensive growth-facilitative models of social support, suggest that cognitive processes are a crucial component in the development of personal growth (Hogan & Schmidt, 2002; Joseph & Linley, 2005; Nolen-Hoeksema & Davis, 2004; Tedeschi & Calhoun, 2004). As described above, each model emphasizes a common component of cognitive reflection and integration (e.g. integrating information regarding the loss into

cognitive structures) that stems largely from social-cognitive theory. However, there are some differences in whether helpful cognitive processing is automatic and intrusive, or whether another, more deliberate and neutrally-valenced, form of reflection is most related to growth. These differences carry significant implications. From a treatment perspective, a deliberate, reflective form of cognitive processing as a coping mechanism is likely easier for bereaved individuals to control and to utilize than automatic, intrusive thoughts. These differences in conceptualization have not yet been assessed using appropriate research designs. In addition, it is believed that different types and presentations of social support might impact these cognitive processes differently, but few authors attempt to discuss these effects. A review of the potential implications of cognitive processing on social support and growth-facilitative models is presented here.

Much of the work on cognitive processing following bereavement applies earlier Piagetian notions (1963) of cognitive structures and the processes of assimilation and accommodation to understanding of new information presented by bereavement circumstances. For example, Joseph and Linley (2005) emphasize the role of assimilation and accommodation of trauma-related information in the development of growth. Their model suggests that some trauma-related information can be incorporated (assimilated) into existing beliefs and cognitive structures, whereas other information is too discrepant from previous beliefs to allow incorporation. This trauma-related information can only be accounted for by altering existing beliefs about the world and about the self (accommodation). These authors believe that growth occurs as a result of these changes/accommodations to cognitive structures. Similarly, Tedeschi & Calhoun (2004) suggest that the cognitive processing necessary to facilitate growth is a deliberate process that allows individuals to consider the discrepancy between core beliefs, or schemas, developed from previous experience and new information presented following a

traumatic life event (such as bereavement). This process allows the individual to alter existing beliefs (accommodation) and to develop coherent personal narratives regarding the bereavement circumstances (Niemeyer, 2004).

Janoff-Bulman (1992) has suggested that this process of accommodation is accomplished by actively reevaluating the traumatic event to reduce the distance between prior beliefs (how things were or should have been) and new information (how things appear to be now). This reevaluation can be positive or negative in nature and can take the form of self-blame for the event, comparing the trauma to others' experiences of trauma (downward comparison), or focusing on the benefits or meaning of the event. Possibilities for growth would likely stem from the latter. Similarly, Folkman (1997) indicates that cognitive reappraisal of the event (both positive and negative), as a form of accommodation, is often utilized as a coping strategy following stressful life events such as bereavement.

In the past, researchers have included a variety of measures, including measures of PTSD symptoms (e.g. intrusive thoughts; Cadell, Regehr, & Hemsworth, 2003) to capture the cognitive processing component of adaptation to bereavement. These studies tend to support the notion of Hogan and Schmidt (2002) that intrusive thoughts are a mechanism to growth. However, Tedeschi and Calhoun (2004) argue that general cognitive consideration of aspects of the bereavement experience is not sufficient to promote growth outcomes. Automatic cognitive processing by way of intrusive thoughts of the deceased is not believed to be directly related to personal growth. Rather, these authors suggest that growth is facilitated by conscious, recurrent, and instrumental thinking about unattained goals and the discrepancy between previous beliefs and new information presented by bereavement. Tedeschi and Calhoun label this process "event-related rumination." In this sense, the cognitive processing emphasized by these authors

is different from constructs such as intrusive thinking or brooding rumination that emphasizes "moody pondering" of the event. Instead, the construct of cognitive processing is similar to a type of rumination discussed by Nolen-Hoeksema and Davis (2004) called "reflection," which is more resolution-oriented. It also bears significant similarity to the construct of positive reinterpretation coping, which is defined as an active construal of an event in a positive light (Scheier, Weintraub, & Carver, 1986).

According to Tedeschi and Calhoun (2004), social support is believed to facilitate these dimensions of cognitive processing that lead to growth. Specifically, this process might occur through several mechanisms. First, these authors suggest that "schema transmission" could take place, by which a supportive other directly presents the bereaved individual with new ways of interpreting information presented by the loss. Second, the supportive other can provide direct feedback to the bereaved individual regarding their coping mechanisms, affect, and reported interpretations of the loss event by which more positive reinterpretations are reinforced. Third, the supportive other can provide empathy and a warm, secure environment for the bereaved individual to disclose difficult cognitions and emotions, thus facilitating reorganization of information related to the loss. The first two mechanisms offer descriptions of informational, advice, or guidance forms of support, whereas the third mechanism refers to emotional forms of support. To date, little research has directly examined the potential relationships of these effects of social support on cognitive processing and personal growth.

Indirect experimental evidence for the role of these cognitive processes in the development of growth outcomes has come from written disclosure studies, in which participants are asked to write about their thoughts and/or feelings associated with their loss (or trauma). Pennebaker, Zech, & Rime (2001) suggest that written or verbal disclosure involves elements of the social support process whereby the individual is able

to discuss difficult cognitions and feelings and potentially develop a new framework for understanding the event. Unlike social support, the written disclosure paradigm does not incorporate feedback, advice/guidance, or provision of emotional support that is typically involved in social support interactions by which the individual might normalize and accept his or her thoughts/feelings related to the death. A preliminary study looking at posttraumatic growth following various stressful circumstances (including bereavement) demonstrated significantly higher growth outcomes when writing about one's thoughts related to the trauma in four trials over one month as compared to writing about emotions or an unrelated topic (Ullrich & Lutgendorf, 2002). Without further study, it is too early to determine whether this effect would be seen when studied in bereaved populations alone.

Aside from written disclosure studies, further support for the relationship between these cognitive coping constructs and positive outcomes following bereavement comes from a study that examined these processes at 6 and 13 months post-loss (Nolen-Hoeksema & Davis, 2004). According to this study, items from the Response Styles Questionnaire that assess the construct of reflection positively predicted reports of benefit finding 13 months after the loss. In addition, reflection was found to be significantly related to the use of positive reappraisal coping in this study. Likewise, positive reappraisal coping has been positively associated with perceptions of growth in several studies (Park, Cohen, & Murch, 1996; Sears, Stanton, & Danoff-Burg, 2003; Widows, Jacobson, Booth-Jones, & Fields, 2005), as have other forms of approach coping (Widows, Jacobson, Booth-Jones, & Fields, 2005). Tedeschi and Calhoun (2004) also present preliminary data from a study of bereaved parents in which intrusive thoughts about the death of a child were unrelated to growth outcomes, whereas other types of cognitive processing were related. Specifically, growth was positively related to

retrospective reports of nonintrusive repetitive thinking and attempts at meaning making, as well as recent reports of positive reinterpretation coping and benefit reminding. Further characteristics of this population and procedural methods were not presented, making it difficult to draw further conclusions about these initial data.

The Current Study

While existing research indicates a role for both social support and cognitive processing in growth outcomes, few studies have explored these findings in bereaved populations. In addition, little is known about the conceptualizations of social support that are most predictive of growth outcomes in bereaved populations. Finally, there are few, if any, studies clearly examining the role of cognitive processing as a mediator in the relationship between social support and growth. Such studies are needed to compare the relationship of different conceptualizations of cognitive processing to growth outcomes (Hogan & Schmidt, 2002; Tedeschi & Calhoun, 2004), as well as provide a direct test of these aspects of Tedeschi and Calhoun's (2004) model of growth. The goal of the current study was to examine these gaps in the current literature by testing the relationship between different social support constructs and growth outcomes among bereaved populations. In addition, this study provided a test of the growth-facilitative effects of support, as well as the mediational role of cognitive processing, within the posttraumatic growth model.

Considering prior research examining social support, cognitive processes, and personal growth, the following hypotheses were offered with regard to the bereaved:

1. Regarding the relationship between types of support functions and personal growth in this study, it was hypothesized that empathic/emotional and advice/guidance forms of support will positively correlate with personal growth scores. This hypothesis was derived from Tedeschi and Calhoun's (2004)

predictions that social support impacts growth outcomes through several means, including the transmission of schemas and the facilitation of openness to new ideas in a warm and caring environment. As there has been no discussion of the relationship of other forms of support, such as instrumental or companionship support, to personal growth, no hypotheses regarding these forms of support were offered and the current study does not examine these constructs.

2. Although support satisfaction has demonstrated a mixed relationship with personal growth in previous studies, it is believed that methodological problems may have contributed to difficulties finding an effect. The current study hypothesized that support satisfaction and network size (as measured by number of supportive others) is positively correlated with personal growth.
3. With regard to the relationship of cognitive processing variables to personal growth, it was hypothesized that: a) deliberate, reflective cognitive processes regarding the death of a loved one (e.g. positive reappraisal coping and reflective rumination) is positively correlated with scores on measures of personal growth, b) intrusive, automatic cognitive processing of the loss is negatively correlated with growth outcomes, c) intrusive, automatic cognitive processing is positively correlated with symptoms of grieving, and d) reflective cognitive processing of the loss does not predict grief symptoms.
4. The primary purpose of this study was to test the mediation models of personal growth presented by Tedeschi and Calhoun (2005) and Hogan and Schmidt (2002). Specifically, given the theoretical arguments and available research presented above, it was hypothesized that aspects of deliberate, reflective cognitive processing of the loss (e.g. positive reappraisal coping, and reflective rumination) mediate the relationship between social support functions and

personal growth, whereas intrusive, automatic processing of the loss (e.g. intrusive thinking) does not.

Methods

Participants

Participants were recruited through advertisements to local hospice organizations and through online advertisements distributed to six Midwestern metropolitan areas through an online service (Craigslist.com). A total of 276 individuals contacted the researcher for more information about the study. For inclusion in the study, participants must have experienced the death of an immediate family member (i.e. spouse/partner, child, parent, or sibling) within the past three years, and must have been at least 18 at the time of the death. Time since death was restricted for the current study based upon prior research findings that discovered significant differences in reported growth between individuals bereaved less than three years versus individuals bereaved for three years or longer (Hogan, Greenfield, & Schmidt, 2001). It is of particular interest to the current study to examine the relationship of social support and growth within the first three years following loss. A total of 177 participants met criteria for the study and agreed to participate. The final sample consisted of 114 participants who returned completed questionnaire packets, which represents a 65.0% return rate of total packets sent. Other than initial screening questions addressing inclusion criteria, other screening variables were not assessed prior to participation in the study; therefore, further analyses comparing study completers and non-completers are not possible. As compensation for their time, participants were able to enter into a lottery to win one of four $50 drawings. Participants were informed of the approximate number of individuals participating in the study in order to assess their chances of winning the drawing.

Demographic characteristics of the participants and their deceased family members are presented in Tables 1 and 2. The final sample of participants consisted of 90 women and 24 men. The mean length of time since the family member's death was 14.6 months (*SD* = 9.5, *Mdn* = 13.0 months). Sixty-one percent of participants reported the death of a family member by illness/health, 25% reported death by accident, 8% by homicide, and 6% by suicide. With regard to relationship to the deceased, 22% lost a child, 46% lost a parent, 26% lost a spouse/partner, and 6% lost a sibling. The mean age of family members at the time of death was 51.1 (*SD* = 23.1), and gender of the deceased family member was approximately equivalent (51% female, 49% male). The mean age of participants was 41.7 (*SD* = 12.3), and participants were predominantly Caucasian (78%), married (45%), and highly educated, with 95.6% having completed a high school education or greater. Twenty-three percent of the sample reported having attended a bereavement support group at least once in the past.

Procedure

Each bereaved individual meeting inclusion criteria and agreeing to participate was mailed a packet containing a consent form, a demographics form, standardized instruments, and a stamped return envelope. Returned data packets were assigned a code number and kept in a locked case file to ensure anonymity and security of the data.

Measures

Demographic Questionnaire

Demographic information and bereavement circumstances were obtained using a self-report questionnaire (See Appendix). Requested demographic information included gender, age, education, ethnicity, time since loss, marital status, support group attendance, age and gender of deceased, type of death, and relationship to the deceased.

Table 1

Participant Demographic Information

Demographic Variables	N	%	Mean	Std. Dev.	Range
Gender					
Female	90	78.9			
Male	24	21.1			
Total	114	100			
Age (In Years)	114		41.7	12.3	18-68
Race/Ethnicity					
Caucasian	89	78.1			
African American	14	12.3			
Asian American	2	1.8			
Hispanic/Latino/a	3	2.6			
Other	6	5.3			
Total	114	100.0			
Education (Years Completed)	114		14.1	2.3	9-20
Degree Completed					
High School Diploma	59	51.8			
College Degree	37	32.5			
Graduate Degree	13	11.4			
Other/None	5	4.4			
Total	114	100.0			
Marital Status					
Married	51	44.7			
Widowed	22	19.3			
Divorced/Separated	22	19.3			
Single	19	16.7			
Total	114	100.0			
Relationship to Deceased					
Death of Child	25	21.9			
Death of Parent	52	45.6			
Death of Spouse/Partner	30	26.3			
Death of Sibling	7	6.1			
Total	114	100.0			
Previous Support Group Attendance					
Yes	26	23.0			
No	87	77.0			
Total	113	100.0			

Table 2

Demographic Characteristics of the Deceased Family Members

Demographic Variables	N	%	Mean	Std. Dev.	Range
Gender					
Female	57	50.9			
Male	55	49.1			
Total	112	100.0			
Age at Time of Death (In Years)	114		51.1	23.1	0-95
Time Since Death (In Months)	114		14.6	9.5	0-36.0
Cause of Death					
Illness/Health	69	60.5			
Accident	29	25.4			
Homicide	9	7.9			
Suicide	7	6.1			
Total	114	100.0			

Social Support

Social Support Behaviors Scale (SSB; Vaux, Riedel, & Stewart, 1987). The perceived availability of various types of social support was assessed with the SSB. The SSB is a 45-item, self-report inventory in which participants rate their perceptions that support from their family and friends will be available when they need it. Separate ratings for family and friends are made on a 5-point Likert scale ranging from 1 ("No one would do this") to 5 ("Most would do this"). Items from the SSB describe five modes of social support including: emotional, socializing (companionship), practical assistance, financial assistance, and advice/guidance. Sample items from the subscales include: "Would comfort me if I was upset" (emotional), "Would go to a movie or a concert with me" (socializing), "Would loan me a car if I needed one" (practical assistance), "Would pay for my lunch if I was broke" (financial assistance), and "Would suggest how I could find out more about a situation" (advice/guidance). The authors of the SSB report good internal consistency for the total scale score (.85) and each subscale (>.80). Computed for the current study, Cronbach's alpha for the total scale score was .98 and subscales ranged from .91 to .96. Convergent validity has been demonstrated through correlations with other measures of social support (Vaux, et al, 1987). Small to moderate correlations have been noted between the subscales, reducing potential difficulties in determining differential relationships between growth and various supportive functions. The SSB, as a measure of perceived support, is of particular interest to the current study because it includes both advice/guidance and emotional support subscales, both of which are hypothesized to facilitate posttraumatic growth (Tedeschi & Calhoun, 2004).

Social Support Questionnaire – Short Form (SSQ-SF; Sarason, Sarason, Shearin, & Pierce, 1987). Additional aspects of perceived social support were assessed with the

SSQ-SF, including amount of and satisfaction with support. The SSQ-SF is a 6-item, self-report measure for which participants respond to items by listing the individuals they consider available to provide support and by rating their satisfaction with supports on a 6-point Likert scale. Item examples include "Whom can you count on to console you when you are very upset?" and "Whom can you really count on to distract you from your worries when you feel under stress?" Although the authors suggest this brief measure assesses only the emotional form of support, the SSQ-SF provides a subscore for both number of supports and satisfaction. This brief measure is derived from a 27-item version that has demonstrated good reliability and validity. With regard to the short form of the scale, the authors of the SSQ report good internal reliability ranging from .90 to .93 for the Number and Satisfaction subscales, as well as a test-retest reliability of .90 at four weeks. In the current study, internal reliability for the Number subscale was .91 and Satisfaction subscale was .92. The measure correlated highly with other measures of social support and with the 27-item SSQ in three validation samples (Sarason, et al., 1987). The SSQ-SF was administered for the present study because it is believed to provide additional information regarding perceived support not captured by the SSB. Specifically, the SSQ measures number of available supports and satisfaction with support, whereas the SSB focuses on ratings of specific support functions from specific sources.

Deliberate Cognitive Processing

Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991). Positive and negative cognitive processing regarding the death of a loved one was assessed using the RRS. The RRS is a 22-item, self-report inventory in which participants rate the frequency of recent thoughts regarding depressed mood and its possible causes and consequences. Participants endorse frequency of items on a 4-point Likert scale from 1

("almost never") to 4 ("almost always"). For example, participants are asked how often they "Write down what they are thinking and analyze it," "Think about how you don't seem to feel anything anymore," and "Think about how alone you feel." The RRS was originally developed as a subscale of the Response Styles Questionnaire (Nolen-Hoeksema & Morrow, 1991). Research regarding the construction of the RRS suggests that the rumination items of the scale can be further categorized into three subscales: general depressive rumination, brooding, and reflection (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The five items of the reflection subscale are of particular interest to the present study because of their emphasis upon neutrally-valenced, active cognitive reflection of the situation that is similar to the conceptualization of cognitive processing discussed by Tedeschi and Calhoun (2004). Researchers have demonstrated adequate internal consistency for the total RRS scale (.90). Consistency for the reflection subscale appears low (.72) but is adequate considering the low number of items for the scale. In the current study, Cronbach's alpha for the reflection subscale was .71. In order to assess bereavement-related cognitive processing specifically, the RRS instructions for the proposed study were modified to direct participants to their thoughts and actions as they relate to their feelings about the death of their family member.

Positive Reinterpretation Coping Subscale (Carver, Scheier, & Weintraub, 1989). In order to assess positive reinterpretation coping in this bereaved sample, participants completed the 4-item positive reinterpretation coping subscale from the COPE scales. The original 60-item, self-report COPE scale consists of 15 subscales that measure problem-focused, emotion-focused, and avoidant coping strategies for individuals who have experienced a stressful event. Items from the positive reinterpretation subscale are "I look for something good in what is happening," "I try to see it in a different light, to make it seem more positive," "I learn something from the experience," and "I try to grow

as a person as a result of the experience." Participants rate their use of these strategies on a 4-point Likert scale ranging from 1 ("not at all") to 4 ("a lot"). Precedent for the individual use of the positive reinterpretation subscale comes from prior studies of trauma and growth, and the subscale has demonstrated adequate internal consistency ($\alpha = .75$) in a sample of individuals who had experienced a variety of stressful life events (Park, Cohen, & Murch, 1996). Cronbach's alpha for the subscale in the current study was .87. The scale has demonstrated a positive correlation with optimism, and has demonstrated discriminant validity with other personality and coping constructs (Carver, Scheier, & Weintraub, 1989). Instructions for completing the scale were modified so that participants were instructed to rate their use of strategies when dealing with the death of their loved ones.

Automatic Cognitive Processing/Intrusive Thoughts

Impact of Events Scale – Revised (IES-R; Weiss & Marmar, 1997). Participants' experience of automatic, intrusive thoughts was assessed using the intrusive thoughts subscale of the IES-R. The IES-R is a 21-item scale that asks for self-ratings of trauma-related intrusion, avoidance, and hyperarousal symptoms as participants have experienced them over the past week. Self-ratings are on a 5-point Likert scale ranging from 0 ("not at all") to 4 ("extremely"). Examples of the subscale items include "I thought about it when I didn't mean to" (intrusion), "I tried to remove it from my memory" (avoidance), and "I had trouble falling asleep" (hyperarousal). The authors report an average test-retest reliability coefficient of .91 for a 2-week period. In the current study, the intrusion subscale demonstrated good internal consistency ($\alpha = .90$). For the proposed research, the IES-R instructions were modified slightly to focus attention onto the *death* of one's family member, and not on the memory of the family member him/herself.

The current study examined responses to multiple measures of cognitive processing for two reasons. First, each of these scales is only a few items in length, and multiple measures of the general construct might improve the construct's stability in data analyses. Second, although each measure assesses a form of cognitive processing, each form is conceptually distinct, particularly between intrusive and reflective forms of processing. Comparison based upon different forms may add clarification to existing models of social support and personal growth.

Grief Symptoms and Personal Growth

Hogan Grief Reaction Checklist (HGRC; Hogan, Greenfield, & Schmidt, 2001). Perceptions of personal growth and grief reactions resulting from the struggle with the death of a loved one were assessed with the HGRC. The HGRC is a 61-item self-report inventory that assesses both positive and negative reactions to the experience of bereavement including: despair (13 items), panic behavior (14 items), blame and anger (7 items), detachment (8 items), disorganization (8 items), and personal growth (11 items). Participants rate these experiences over the past two weeks using a five-point Likert scale ranging from 1 ("Does not describe me at all") to 5 ("Describes me very well"). Items from the HGRC include "I am resentful," "I have lost my confidence," "I feel unable to cope," and "I am more tolerant of myself." While subscale scores can be calculated, a total score is not typically derived due to the negative correlation of the personal growth subscale with other subscales. The HGRC attempts to improve upon prior attempts to measure personal growth following trauma by including both positive and negative reactions to loss within the same measure, with the goal of reducing positive response bias.

The HGRC demonstrated good reliability in a sample of 586 bereaved adults (Hogan, Greenfield, & Schmidt, 2001), with acceptable test-retest reliability correlations

for each of the subscales (.56 to .85), including the personal growth subscale (.81). The study also demonstrated adequate overall internal consistency for the total instrument (.90) and for the subscales (Personal Growth, .82; Despair, .89; Panic Behavior, .90; Blame and Anger, .79; Detachment, .87; and Disorganization, .84). In the current study, internal consistency for the Personal Growth subscale was good (α = .90). The authors of the scale report adequate discriminant and convergent validity. The HGRC has been used in a previous study of bereaved parents to test a model of social support, cognitive processing and personal growth (Hogan & Schmidt, 2002).

Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1995; Tedeschi & Calhoun, 1996). The PTGI assesses five specific areas of growth including New Possibilities (5 items), Relating to Others (7 items), Personal Strength (4 items), Spiritual Change (2 items), and Appreciation of Life (3 items). Scores are produced for both subscales and total score. The 21-item self-report inventory asks participants to respond to items on a 6-point Likert scale ranging from 0 ("I did not experience this change as a result of my crisis") to 5 ("I experienced this change to a very great degree as a result of my crisis"). Items include "My priorities about what is important in life," "A willingness to express my emotions," and "Knowing that I can count on people in times of trouble." The PTGI has demonstrated adequate validity in a sample of undergraduate students (Tedeschi & Calhoun, 1996), with individuals who experienced severe trauma obtaining higher scores than those who had not. Pearson product-moment correlations between subscales with the same sample revealed some relationship between subscales (.27 to .52), but also some individual contributions for each factor. Test-retest reliability for the total score was .71. In the current study, Cronbach's alpha for the total score was good at .94.

Results

Preliminary Data Analyses

Factor Analysis

Given the administration of multiple self-report measures and subscales of grief symptoms and personal growth in the current study, scales assessing each of these constructs were entered into separate factor analyses to determine the shared variance among these measures. Primary factors for these constructs, rather than individual subscales, were then entered into subsequent analyses in order to reduce the number of analyses and models tested. Factors for social support and cognitive processing were not computed, as the scales assessing these two constructs are conceptually distinct. In addition, several hypotheses for the current study aim to analyze differences between these individual subscales.

In order to reduce the number of scales measuring personal growth for further analyses, the PTGI total and HGRC growth subscale scores were entered into principal factors extraction in SPSS statistical computer software. One primary factor demonstrated an eigenvalue above 1.0. Variance in growth scores explained by the factor was substantial at 87.2%. Factor loading for the PTGI total was .86 and HGRC growth scale was .86, indicating a stable factor solution and comparable contribution for these measures. Chronbach's alpha for these two scores was .78. This single personal growth factor was extracted, and factor scores were calculated and saved for further analysis using the regression approach. Compared with other methods for calculating factor scores, the regression method is best understood, and is preferable here because concerns about the correlation in scores between factors that this method produces are irrelevant given that only one factor was extracted (Tabachnick & Fidell, 2001). .

Similarly, the grief subscales of the HGRC (i.e. Despair, Panic, Blame and Anger, Detachment, and Disorganization) were entered into principal factors extraction in order to reduce this data into a single factor score. Again, one primary factor demonstrated an eigenvalue above 1.0. Variance in grief scores explained by the factor was 58.7%. Factor loadings were .86 for Despair, .82 for Panic, .52 for Blame and Anger, .87 for Detachment, and .71 for Disorganization, indicating a stable factor solution. Chronbach's alpha for these five scores was .87. In addition, the variables demonstrated comparable contribution to the factor score, facilitating ease of interpretation. The single grief factor was extracted, and factor scores were calculated and saved for further analysis using the regression method.

Distribution Characteristics

Each scale and factor used in the analyses was examined for skew and kurtosis. Results of these analyses are condensed in Table 3. The SSQ number subscale demonstrated positive skew, and was subsequently transformed using square root of scale scores. This substantially reduced skew for this variable. The SSQ satisfaction subscale demonstrated negative skew. Analysis of the distribution of the satisfaction subscale revealed that the mean of items was above five out of a total of six points. As a result of this ceiling effect, satisfaction was dichotomized into two groups for further analyses, so that participants with a total score below five could be compared with participants with a total score of five or greater.

Analysis of Potential Covariates

Statistical analyses were performed comparing participants' personal growth factor scores with demographic status in order to identify potential covariates of personal

Table 3

Descriptive Statistics and Distribution Characteristics (N = 114)

Variable	Mean	SD	Skewness	Kurtosis
Personal Growth Factor	.00	1.00	-.32	-.55
Grief Factor	.00	1.00	.32	-.84
SSB Family Emotional	37.53	11.66	-.38	-.74
SSB Friend Emotional	41.27	9.42	-.38	1.27
SSB Family Advice/Guidance	42.23	12.75	-.28	-.75
SSB Friend Advice/Guidance	43.52	12.19	-.35	-.61
SSQ Number*	4.29	2.35	.74	-.41
SSQ Number (Square Root)	1.99	.57	.18	-.39
SSQ Satisfaction**	5.02	1.04	-1.31	1.66
PRC Total	10.66	3.79	-.12	-.72
RRS Reflection	10.62	3.53	.27	-.71
IESR Intrusive	25.32	8.67	-.17	-1.23

Note. SSB = Social Support Behaviors Scale; SSQ = Social Support Questionnaire – Short Form. PRC = Positive Reinterpretation Coping; RRS = Ruminative Responses Scale; IESR = Impact of Events Scale – Revised.

*SSQN selected for square-root transformation.

**SSQS recoded into dichotomous variable for Mean < 5 (N = 28) and Mean $\geq$ 5 (N= 85).

growth for later analysis (See Table 4). Independent samples t-test yielded no significant differences in personal growth factor scores based on gender of participant ($t(112) = 1.07$, n.s.), gender of the deceased ($t(110) = .43$, n.s.), or past support group attendance ($t(111) = .36$, n.s.). Correlations between personal growth factor scores and age of participant ($r = -.11$, n.s.), age of deceased ($r = -.03$, n.s.), and participants' years of education ($r = .13$, n.s.) were not significant. Analysis of variance yielded no significant differences in personal growth based on cause of death ($F(3, 110) = 1.25$, n.s.), relationship to deceased ($F(3, 110) = .34$, n.s.), marital status ($F(3, 110) = 1.08$, n.s.), and race/ethnicity ($F(4, 109) = 1.50$, n.s.). Due to concerns of reduced power based on small numbers of participants representing certain types of loss (e.g. Suicide, $N = 7$), ethnicity (e.g. Asian American, $N = 2$), and certain relationships to the deceased (e.g. Siblings, $N = 7$), means and confidence intervals were examined for each category for these variables. Based on 95% confidence intervals for the means of each demographic subgroup (see Table 4), there is further support that subgroups do not differ significantly on personal growth factor scores. With regard to type of loss, the illness/health group was also compared to the other three types of loss as a combined group to determine whether there was a difference between more sudden, unexpected losses and prolonged or "expected" losses. There were no significant differences between these two groups on the growth factor score ($t(112) = 1.26$, n.s.). As none of the demographic variables demonstrated a relationship with personal growth, none were entered as covariates in the regression analysis.

Time since death and grief symptoms were also considered as potential covariates of personal growth. Time since death has demonstrated a positive relationship with growth in some previous studies (Davis, Nolen-Hoeksema, & Larson, 1998; Engelkemeyer & Marwit, 2008; Polatinsky & Esprey, 2000), but not in others (Bower,

Table 4

Personal Growth Factor Score Means, Standard Deviations, and 95% Confidence Intervals for Demographic Subgroups

Demographic Variable	*N*	*M*	*SD*	*T*	*F*	95% Confidence Interval
Gender of Participant				1.07		-.27 to .76
Female	90	.05	.96			
Male	24	-.19	1.12			
Gender of Deceased				.43		-.30 to .46
Female	57	.04	1.0			
Male	55	-.04	.99			
Past Support Group Attendance				.36		-.36 to .53
Yes	26	.07	1.14			
No	87	-.01	.96			
Cause of Death					1.25	
Illness/Health	69	.09	.93			-.13 to .32
Accident	29	-.08	1.11			-.50 to .34
Homicide	9	.02	.79			-.58 to .64
Suicide	7	-.06	1.37			-1.91 to .62
Relationship to Deceased					.34	
Death of Child	25	-.07	1.15			-.54 to .41
Death of Parent	52	.02	.87			-.23 to .26
Death of Spouse/Partner	30	.10	1.11			-.32 to .51
Death of Sibling	7	-.03	.98			-1.21 to .60
Marital Status					1.08	
Married	51	.07	.78			-.20 to .34
Single	19	.26	.97			-.12 to .64
Widowed	22	-.20	1.06			-.67 to .27
Divorced	22	-.19	1.16			-.71 to .32
Race/Ethnicity					1.5	
Caucasian	89	-.06	.92			-.26 to .13
African American	14	.05	1.16			-.17 to 1.17
Asian American	2	-.30	1.75			-16.37 to 15.10
Hispanic/Latino/a	3	-.07	1.36			-4.07 to 2.72
Other	6	.03	1.28			-1.01 to 1.67

Note. All *t*-tests and ANOVAs were not significant, $p > .05$.

Kemeny, Taylor & Fahey, 1998; Hogan & Schmidt, 2002). Time since death did not significantly correlate with the personal growth factor score in the current study (r = .12, n.s.). Visual analysis of the scatterplot failed to reveal a non-linear relationship. The lack of relationship between these two variables in the current study may be due to a number of factors, but it is noteworthy that the current study restricted time since death to three years post-loss, whereas other studies that did discover a relationship examined a longer time frame post-loss (Engelkemeyer & Marwit, 2008; Polatinsky & Esprey, 2000), or performed a longitudinal assessment of growth (e.g. Davis, Nolen-Hoeksema & Larson, 1998). Due to the lack of a relationship, time since death was not entered as a covariate in later models.

Grief symptoms have demonstrated a significant negative relationship with personal growth in several studies (e.g. Engelkemeyer & Marwit, 2008; Hogan & Schmidt, 2002), and grief was considered as a potential covariate in the present study. In the current study, the grief symptom factor showed a large and significant negative relationship with the personal growth factor (r = -.53). Therefore, the grief symptom factor was entered as a covariate in future regression models.

Hypothesis 1

Correlations between emotional and advice/guidance types of support and growth factor scores are presented in Table 5. In support of Hypothesis 1, ratings of emotional support from family members demonstrated a large positive correlation with personal growth factor scores (r = .47, p < .001), and emotional support from friends demonstrated a medium positive correlation with growth (r = .26, p < .01). A Fisher r-to-z transformation yielded a z = 2.57 (p = 0.01), indicating that emotional support from family had a significantly larger correlation with growth than emotional support from

Table 5

Correlation Coefficients for Growth Factor Score, Grief Factor Score, Social Support, and Cognitive Processing Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Personal Growth Factor	1.00										
2. Grief Factor	-.53***	1.00									
3. SSQN	.37***	-.36***	1.00								
4. SSQS	.32***	-.28**	.27**	1.00							
5. SSB Family Emotional	.47***	-.29**	.39***	.40***	1.00						
6. SSB Friend Emotional	.26**	-.28**	.32***	.23*	.84***	1.00					
7. SSB Family Advice	.38***	-.19*	.37***	.42***	.59***	.54***	1.00				
8. SSB Friend Advice	.25**	-.21*	.36***	.36***	.44***	.75***	.67***	1.00			
9. PRC	.65***	-.58***	.23**	.14	.15	.12	.11	.11	1.00		
10. RRS Reflect.	-.08	.38***	-.02	-.02	-.17	-.16	.02	.00	-.08	1.00	
11. IESR Intrusion	-.35***	.66***	-.30***	-.24**	-.14	-.12	-.14	-.18	-.37	.15	1.00

Note. SSQN = Social Support Questionnaire – Short Form, Number Scale; SSQS = Social Support Questionnaire – Short Form, Satisfaction Scale; SSB = Social Support Behavior Scale; PRC = Positive Reinterpretation Coping; RRS Reflect. = Ruminative Responses Scale, Reflection Subscale; IESR = Impact of Events Scale Revised.

*$p < .05$. **$p < .01$. ***$p < .001$.

friends. Advice/guidance types of support from both friends and family demonstrated medium positive correlations with growth (r = .38, p < .001 and r = .25, p < .01, respectively). The Fisher r-to-z transformation for these correlations yielded a z = 1.53 (n.s.), indicating the difference in relationship between friend and family advice/guidance support with growth was not significant.

Hypothesis 2

Hypothesis 2 was also confirmed by the correlations presented in Table 5, such that support satisfaction demonstrated a medium positive correlation with the personal growth factor (r = .32, p < .001). This finding indicates that individuals who endorsed higher ratings of satisfaction with their network's ability to meet their support needs tended to report higher levels of personal growth. In addition, number of supportive others, as measured by the number subscale of the SSQ, also demonstrated a medium positive correlation with growth, such that individuals who identify higher numbers of individuals to provide support also tend to report higher levels of growth.

Hypothesis 3

In order to determine the relationship between cognitive processing variables and reports of personal growth, correlations between these variables were calculated and are presented in Table 5. Data analyses provide partial support for the first two predictions of Hypothesis 3. First, the relationship varied between personal growth factor scores and variables measuring deliberate, reflective types of cognitive processing. For example, PRC total scores demonstrated a large positive correlation with growth factor scores (r = .65, p < .001), indicating that bereaved individuals who reported higher levels of positive reappraisal coping tended to report higher levels of personal growth, whereas cognitive reflection was not correlated with growth (r = -.08, n.s.). Visual inspection of the

scatterplot for reflection and personal growth failed to reveal any evidence for a non-linear relationship between these variables. Second, consistent with Hypothesis 3, IES-R Intrusion scores were negatively correlated with personal growth factor scores (r = -.35, p < .001), such that individuals reporting higher levels of intrusive, automatic cognitive processing related to the death of a family member tended not to report significant growth.

Regarding the relationship of cognitive processing variables to grief symptoms, partial support for Hypothesis 3 was obtained. Specifically, intrusive, automatic processing was positively correlated with grief symptom factor scores calculated from subscales of the HGRC (r = .66, p < .001). The magnitude of this correlation indicates a high degree of overlap between intrusive thoughts and grief symptoms. Contrary to the prediction that reflective forms of cognitive processing would not predict grief symptoms, both variables measuring this type of processing demonstrated contrasting relationships with grief. For example, positive reinterpretation coping demonstrated a large negative correlation with grief symptoms (r = -.58, p < .001), whereas cognitive reflection demonstrated a moderate positive correlation with grief (r = .38, p < .001). In other words, variables measuring deliberate, reflective forms of cognitive processing in this study related differently to both personal growth and grief symptoms.

Hypothesis 4

Assumptions of Mediation Models

The "causal steps" model (Baron & Kenny, 1986) was used to assess Hypothesis 4, which postulates that deliberate, reflective cognitive processing variables (i.e. positive reinterpretation coping and reflection) mediate the relationship between social support

and personal growth, whereas intrusive cognitive processing does not mediate this relationship. According to Baron and Kenny (1986), relationships between variables in the mediation model must meet three conditions prior to assessing for mediation. First, the predicting variable (i.e. social support) must demonstrate a significant relationship with the criterion variable (i.e. personal growth). Without a relationship between these two variables, there would be no relationship for the third variable (i.e. cognitive processing) to mediate. Second, the mediating variable must demonstrate a significant relationship with the criterion variable. Finally, the predictor variable must demonstrate a significant relationship with the mediating variable. When these initial criteria are met for a mediation model, multiple regression analysis can then be utilized to assess for mediation, which occurs when the relationship between the predictor and the criterion is diminished when accounting for the variance of the mediating variable.

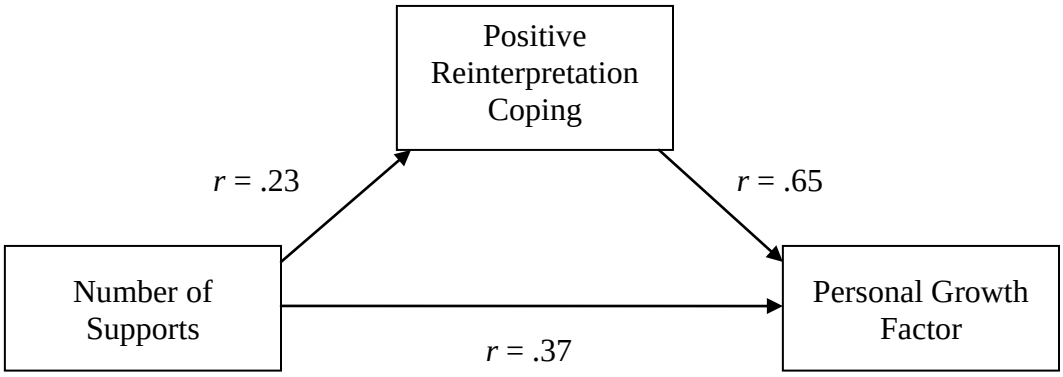
Examination of correlation coefficients (see Table 5) is used to establish Baron and Kenny's (1986) criteria for assessing a mediation model. Hypothesis 1 provided support for the first criterion that social support demonstrate a significant relationship with personal growth factor scores. In the current sample, number of supports, support satisfaction, emotional support, and advice/guidance support all demonstrated significant positive relationships with personal growth factor scores (*r* ranging from .25 to .47), thus meeting the first requirement. As reported for Hypothesis 3, only positive reinterpretation coping and intrusive thoughts met the second criterion, which requires a significant relationship between cognitive processing and personal growth factor scores. Specifically, positive reinterpretation coping as measured by the PRC subscale demonstrated a significant positive relationship with personal growth, whereas intrusive

thoughts had a significant negative relationship with growth. The reflection subscale did not demonstrate a significant relationship with personal growth, and is therefore not considered for further analysis as a mediator of social support and growth. Finally, the relationships between types of social support and the two remaining cognitive processing variables were examined for the third criterion. Number of supports demonstrated a significant positive relationship with positive reinterpretation coping ($r = .23$, $p < .01$) and a significant negative relationship with intrusive thoughts ($r = -.30$, $p < .001$). Support satisfaction demonstrated a significant negative relationship with intrusive thoughts ($r = -.24$, $p < .01$), but did not demonstrate a significant relationship with positive reinterpretation coping ($r = .14$, n.s.). Emotional and advice/guidance types of support, from both family and friends, were not significantly correlated with either cognitive processing variable. As a result of these correlational analyses, only three sets of variables meet all three preliminary criteria for testing mediation (see Figures 1, 2, and 3).

Hierarchical Regression Analysis of Mediation Models

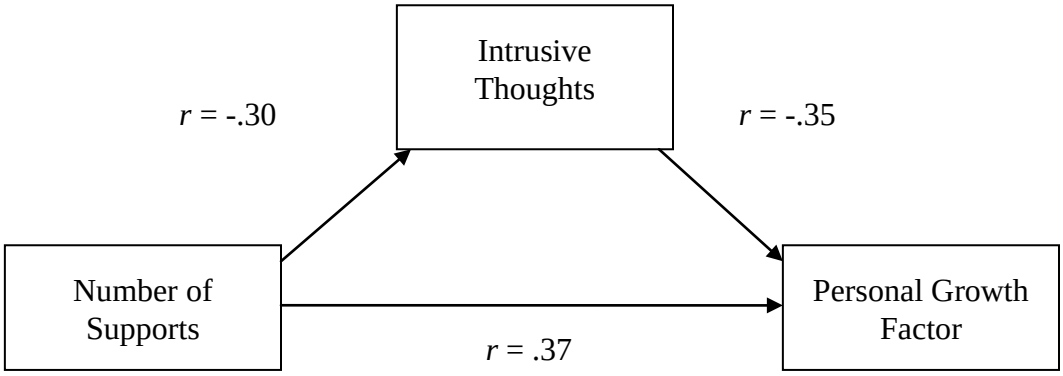
The final step of the "causal steps" model for establishing mediation was assessed using three hierarchical multiple regression models for each set of variables meeting the three criteria outlined above. In each model, the grief symptom factor was entered in the first step as a covariate due to its significant negative relationship with personal growth. The social support variable (i.e. support number or satisfaction) was entered in the model in the second step to determine the variance explained after accounting for grief symptoms. In the third step, the cognitive processing variable was added (i.e. positive reinterpretation coping or intrusive thoughts). According to Baron and Kenny (1986), if

Figure 1. Model for Assessing Positive Reinterpretation Coping as a Mediator of the Relationship between Number of Supports and Personal Growth.



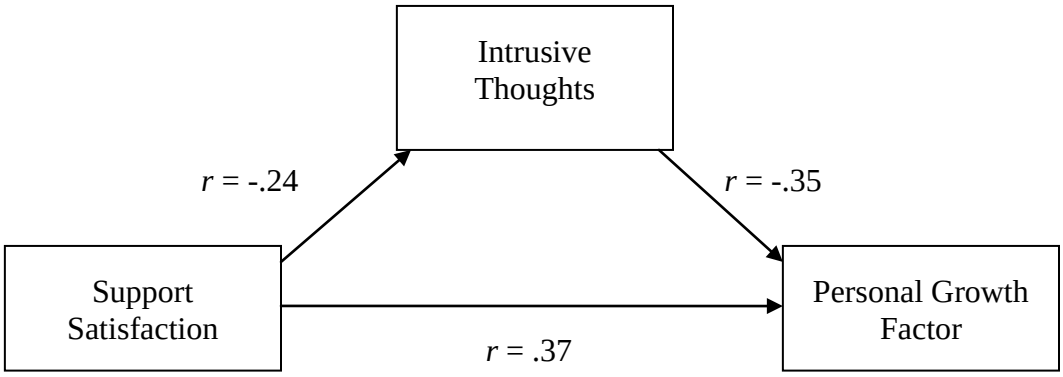
Note. All correlations are statistically significant at $p < .01$ or less.

Figure 2. Model for Assessing Intrusive Thoughts as a Mediator of the Relationship between Number of Supports and Personal Growth.



Note. All correlations are statistically significant at $p < .001$.

Figure 3. Model for Assessing Intrusive Thoughts as a Mediator of the Relationship between Support Satisfaction and Personal Growth.



Note. All correlations are statistically significant at $p < .01$ or less.

mediation is present, cognitive processing will reduce the predictive ability of social support in the final model, as measured by the standardized regression coefficient β.

Results of the first regression model assessing whether positive reinterpretation coping mediates the relationship between number of supports and personal growth are presented in Table 6. Grief symptoms significantly predicted growth scores in the first step, $F(1,112) = 43.23$, $p < .001$, accounting for 28% of the variance in personal growth scores. Number of supports as measured by the SSQ Number subscale was then entered into Step 2. Adding this predictor accounted for an additional 4% of the variance in personal growth, $F(1,111) = 5.91$, $p < .001$. In the final step, positive reinterpretation coping accounted for an additional 18% of the variance in personal growth, $F(1,110) = 38.29$, $p < .001$, after controlling for grief symptoms and number of supports. Together, the entire model accounted for 49% of the variance in personal growth scores. Examination of the standardized regression coefficients in the second and third steps indicates that number of supports remained a significant predictor from Step 2 ($\beta = .21$, $p < .05$) to Step 3 ($\beta = .19$, $p < .05$), and that positive reinterpretation coping was the strongest predictor of growth in the final step ($\beta = .52$, $p < .001$). Taken together, these data indicate that positive reinterpretation coping did not meet criteria for mediation of the relationship between social support number and growth in the current sample using the causal steps model. However, when positive reinterpretation coping was added in the final step, the grief symptom factor was no longer a significant predictor of growth ($\beta = -.16$, n.s.), suggesting a strong mediation effect of positive reinterpretation coping in the relationship between grief symptoms and personal growth.

Table 6

Hierarchical Multiple Regression Predicting Personal Growth with Number of Supports and Positive Reinterpretation Coping

Step and Variables	Adj. R^2	ΔR^2	F	$F\Delta$	Std. β
Step 1:	.28	.28	43.23***	43.23***	
Grief Symptom Factor					-.53***
Step 2:	.32	.04	25.52***	5.91*	
Grief Symptom Factor					-.45***
SSQ Number					.21*
Step 3:	.49	.17	35.49***	38.29***	
Grief Symptom Factor					-.16
SSQ Number					.19*
Positive Reinterpretation Coping					.52***

Note. SSQ Number = Social Support Questionnaire – Short Form, Number Subscale; Adj.R^2 = Adjusted squared multiple correlation; ΔR^2 = Change in squared multiple correlation; Std. β = Standardized β coefficient.

*$p < .05$. **$p < .01$. ***$p < .001$.

The second regression model, which assesses intrusive thoughts as a mediator of relationship between number of supports and personal growth, is presented in Table 7. As in the previous model, grief symptoms significantly predicted growth scores in the first step, and number of supports accounted for an additional 4% of the variance in personal growth in the second step. In the final step, intrusive thoughts did not account for any additional variance in personal growth scores, $F(1,110) = .05$, n.s., after controlling for grief symptoms and number of supports. Together, the entire model accounted for 32% of the variance in personal growth scores. Examination of the standardized regression coefficients in the second and third steps indicates no change in the prediction of personal growth by number of supports from Step 2 to Step 3 ($\beta = .21$, $p < .05$). Also, intrusive thoughts was not a significant predictor in the final step ($\beta = .02$, n.s.). These data indicate that intrusive thoughts did not mediate the relationship between number of social supports and personal growth according to the causal steps model, and it did not add any additional ability to predict growth scores after accounting for grief symptoms and number of supports in the current sample.

The third and final model, assessing whether intrusive thoughts mediate the relationship between social support satisfaction and personal growth, is presented in Table 8. Again, grief symptoms significantly predicted growth scores in the first step. Support satisfaction, as measured by the SSQ Satisfaction subscale with dichotomous scoring, was entered into Step 2. SSQ Satisfaction accounted for an additional 3% of the variance in personal growth, $F(1,111) = 4.86$, $p < .001$. In the final step, intrusive thoughts again did not account for any additional variance in personal growth scores, $F(1,110) = .02$, n.s., after controlling for grief symptoms and number of supports.

Table 7

Hierarchical Multiple Regression Predicting Personal Growth with Number of Supports and Intrusive Thoughts

Step and Variables	Adj. R^2	ΔR^2	F	$F\Delta$	Std. β
Step 1:	.28	.28	43.23***	43.23***	
Grief Symptom Factor					-.53***
Step 2:	.32	.04	25.52***	5.91*	
Grief Symptom Factor					-.45***
SSQ Number					.21*
Step 3:	.32	.00	16.88***	.05	
Grief Symptom Factor					-.47***
SSQ Number					.21*
Intrusive Thoughts					.02

Note. SSQ Number = Social Support Questionnaire – Short Form, Number Subscale; Adj.R^2 = Adjusted squared multiple correlation; ΔR^2 = Change in squared multiple correlation; Std. β = Standardized β coefficient.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 8

Hierarchical Multiple Regression Predicting Personal Growth with Social Support Satisfaction and Intrusive Thoughts

Step and Variables	Adj. R^2	ΔR^2	F	$F\Delta$	Std. β
Step 1:	.28	.28	43.23***	43.23***	
Grief Symptom Factor					-.53***
Step 2:	.31	.03	24.79***	4.86*	
Grief Symptom Factor					-.48***
SSQ Satisfaction					.18*
Step 3:	.31	.00	16.39***	.03	
Grief Symptom Factor					-.49***
SSQ Satisfaction					.18*
Intrusive Thoughts					.02

Note. SSQ Satisfaction = Social Support Questionnaire – Short Form, Satisfaction Subscale; Adj.R^2 = Adjusted squared multiple correlation; ΔR^2 = Change in squared multiple correlation; Std. β = Standardized β coefficient.

*$p < .05$. **$p < .01$. ***$p < .001$.

Together, the entire model accounted for 31% of the variance in personal growth scores. Similar to the previous model, standardized regression coefficients for support satisfaction did not change from Step 2 to Step 3 ($\beta = .18$, $p < .05$), and intrusive thoughts was not a significant predictor in the final step ($\beta = .02$, n.s.). Intrusive thoughts did not meet criteria for mediation between support satisfaction and personal growth in the current sample according to the causal steps model.

For each model, the scatterplots and histograms of residuals produced by the regression equation were examined to test the assumptions of normality, linearity, and homoscedasticity. For each model, the range of residuals was within three standard deviations and demonstrated good linearity, equality of variance, and a distribution that approaches that of a normal curve. The residual analysis did not show any apparent characteristics of the data that would weaken the ability of the regression analysis to find an effect.

Sobel Testing of Mediation Models

In order to increase power to find a mediation effect, mediation was also assessed in supplemental analyses using the more rigorous Sobel test to compute the indirect effect of social support on personal growth through cognitive processing (Baron & Kenny, 1986; Sobel, 1982). According to Preacher & Hayes (2004), the Sobel test has several advantages over the traditional causal steps analyses advocated by Baron and Kenny (1986). Specifically, the Sobel test utilizes fewer analyses, which increases power for finding an effect, and conducts a significance test of the indirect effect not present in the Baron and Kenny model. The Sobel test was computed using a macro developed for SPSS statistical computer software by Preacher and Hayes (in press) that assesses indirect

effects for mediation models while removing variance associated with covariates. This procedure also utilizes a bootstrapping procedure for obtaining confidence intervals, which attempts to correct for positive skew in the sampling distribution of the indirect effect that often occurs in small sample sizes.

The results of the Sobel tests for all three models did not find evidence supporting mediation in the current sample. In the first model, calculation of the indirect effect of number of supports on personal growth through positive reinterpretation coping, after accounting for grief symptoms, showed that the indirect effect was not significant (Sobel = .03, S.E. = .07, 95% CI = -.10 to .19, n.s.). The second model, examining the indirect effect of number of supports on personal growth through intrusive thoughts, after accounting for grief symptoms, was also not significant (Sobel = -.01, S.E. = .02, 95% CI = -.07 to .02, n.s.). Similarly, the third model was not significant, examining the indirect effect of support satisfaction on personal growth through intrusive thoughts, after accounting for grief symptoms (Sobel = -.01, S.E. = .02, 95% CI = -.07 to .03, n.s.).

Observed Power

In order to obtain a post hoc estimate of observed power in the current sample, estimates of effect sizes in the prediction of personal growth were first calculated. Large effects for the total model were observed in regression models 1, 2, and 3 (f^2 = .96, .47, and .45, respectively; Cohen, 1992). For all three models, power was sufficient to find an overall significant effect (L >.99), for L = f^2(n-k-1) with three predictors.

Discussion

As models of posttraumatic and personal growth continue to become more specific in their descriptions of the development of growth, and as they are applied to

adjustment following more specific life events, further research is needed to delineate the pathways involved in the identification of positive personal growth outcomes for specific populations. The present study attempted to examine several of the central tenets of the "posttraumatic growth model" (Tedeschi & Calhoun, 2004) and the "grief to personal growth" model (Hogan & Schmidt, 2002) in a sample of individuals bereaved by a variety of circumstances. Specifically, the present study examined the relationship of social support and cognitive processing variables to personal growth, as well as the role of cognitive processing constructs as mediators of the relationship between social support and personal growth. This represents an improvement upon prior research through comparison of multiple measures of key variables and inclusion of a broad sample of bereavement circumstances to facilitate generalizability to the models of growth. The utility of including social support and cognitive processing variables in personal growth models, as well as the need for further clarification of the mechanisms by which these variables facilitate growth outcomes, is indicated by the current study.

The current study provides support for Tedeschi and Calhoun's (2004) tenet from the posttraumatic growth model that emotional and advice/guidance forms of social support demonstrate a positive association with the identification of growth outcomes, such that individuals who report more support of these types from family and friends also report more personal growth outcomes following bereavement. Other perceived support functions (e.g. practical or financial support) were not included in the current study because other supportive behaviors have not yet been included in models of personal growth. However, it seems reasonable to hypothesize that other types of support may also facilitate personal growth, and perhaps by different means than emotional or

advice/guidance support. For example, practical support (e.g. helping one's parent with finances following the death of a spouse) might help the bereaved individual to take on additional roles and learn new skills not present while the loved one was alive (e.g. O'Bryant & Hansson, 1995). In addition, companionship support (e.g. providing entertainment or humor to a bereaved friend), might serve to distract the individual from painful emotions that inhibit growth outcomes (e.g. Nolen-Hoeksema & Davis, 2004). Future bereavement studies testing models of the relationship between support functions and growth outcomes should consider the possibility that these support functions may facilitate growth by very different means, and should study their effects separately.

The current data also suggest that emotional support demonstrates a significantly larger positive relationship with personal growth when provided by family members than when provided by friends, although both relationships were significant. Emotional support from family members may have a stronger relationship with growth for multiple reasons. One potential explanation for this relationship is that immediate family members are better equipped or are more frequently sought to provide the conditions necessary for personal growth, whatever these may be, due to multiple factors including proximity, availability, experiential similarity, and closer preexisting relationships. Applying Tedeschi and Calhoun's (2004) model, it is possible that family members may be better able to facilitate constructive cognitive processing or reflection of the loss than friends. Family members may be better able to help the individual evaluate discrepancies between previous life assumptions/goals and current information following the loss, and to engage in the processes of assimilation and accommodation for bereavement-related information (Joseph & Linley, 2005). Unfortunately, this latter hypothesis was not

supported by the current study, as support from family and friends did not appear to differ in their relationship with cognitive processing variables. The lack of difference in relationship with cognitive processing variables may be related to problems with validity of the cognitive processing measures used in the current study, an issue that is explored further below.

As previously stated, another potential explanation for the difference between family and friend support is the experiential similarity between bereaved individuals and providers of support. The current study specifically selected participants who had experienced the death of a family member and not a close friend; therefore, it is possible that other family members experiencing the loss of the same person may be better suited to provide support for growth. When support from these individuals experiencing a similar loss is present, there may be an increase in identification of growth outcomes, but when this support from someone experiencing a similar loss is not available, participants may not be as able to recognize growth outcomes. Other indications of the effect of experiential similarity in the current study were not observed, as participants did not differ in reports of personal growth based upon previous support group attendance, which has been suggested in previous studies to relate to experiential similarity of support (e.g. Ogrodniczuk, Piper, Joyce, McCallum, & Rosie, 2002). The difference between emotional support provided by family and friends in the relationship with growth was an incidental finding in the current study, and interpretations should be considered cautiously.

In addition to perceived emotional and advice/guidance support, support satisfaction and network size (i.e. number of supports) also demonstrated a positive

relationship with personal growth. The presence of this relationship between multiple social support measures/variables and personal growth in the current study provides support for a significant positive relationship between social support and growth following bereavement, a key aspect of both the posttraumatic and personal growth models. As stated previously, studies of growth following bereavement (e.g. Hogan & Schmidt, 2002; Martinson & Campos, 1991) have more consistently demonstrated a relationship between social support variables and growth than have studies of non-bereavement trauma circumstances (e.g. Cordova, Cunningham, Carlson, & Andrykowski, 2001; Sheikh, 2004), suggesting that the relationship may be more robust and consistent in bereaved populations. However, despite the presence of a similar positive relationship between multiple measures of support and growth, the possibility remains that different types of social support facilitate growth through different mediating pathways. This will be considered further during discussion of the mediating role of cognitive processing variables.

A second construct that has not been adequately studied in its relationship with personal growth is cognitive processing. Cognitive processing has been defined differently in studies, and, not surprisingly, varying conceptualizations of cognitive processing have demonstrated different relationships with personal growth. For example, previous research has documented positive relationships between personal growth and positive reinterpretation coping (Park, Cohen, & Murch, 1996; Sears, Stanton, & Danoff-Burg, 2003; Widows, Jacobson, Booth-Jones, & Fields, 2005) and cognitive reflection of the loss (Nolen-Hoeksema & Davis, 2004; Tedeschi & Calhoun, 2004), whereas intrusive thinking has had both a negative relationship (Hogan & Schmidt, 2002) and a positive

relationship with growth (Cadell, Regehr, & Hemsworth, 2003). These differences in relationship may be attributed to conceptual differences between cognitive processing constructs, such that measures of automatic, intrusive thoughts may be more akin to measures of distress or posttraumatic stress than measures of more deliberate, reflective forms of cognitive processing. In addition, few studies have examined these constructs within a bereavement population, and no studies have yet compared multiple conceptualizations of cognitive processing in their relationship to growth in a bereavement sample. The current study attempted to improve upon these previous limitations by comparing the relationships of positive reinterpretation coping, cognitive reflection, and intrusive thinking with growth in a bereavement population.

In order to address the notion that these "cognitive processing" variables indeed represent different constructs, the current study hypothesized that measures of more deliberate, reflective forms of cognitive processing (i.e. positive reinterpretation coping and reflective rumination) would have a positive relationship with growth while automatic, intrusive forms of processing would be negatively related to growth. This hypothesis was partially supported. Positive reinterpretation coping demonstrated a large positive correlation with growth in the current sample, whereas intrusive thinking was negatively related to growth. Contrary to prediction, cognitive reflection demonstrated no relationship with growth.

The relationship between positive reinterpretation coping and personal growth suggests that a cognitive form of coping that is approach-oriented and focuses on positive reframing of negative circumstances facilitates personal growth following bereavement. The relationship between positive reinterpretation coping and personal growth (r = .65) is

not surprising considering the substantial overlap between these constructs. Items measuring positive reinterpretation coping appear to reflect an active, intentional reconstruction of one's thoughts about negative events in positive terms (e.g. "I try to see it in a different light, to make it seem more positive"). In other words, this variable may simply reflect an individual's optimistic intention or desire to identify positive outcomes, such as growth in relationships or in outlook on life, in negative situations, which is similar to the actual identification of positive outcomes in personal growth. Despite these similarities, previous authors have advocated for the differences between these two constructs based on the distinction that positive reinterpretation represents an active behavior or coping style, whereas personal growth represents an outcome (Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 2004). Another potential confounding factor is that positive reinterpretation coping items also appear to have considerable face validity, as do items representing personal growth, which may contribute to positive response bias, socially-acceptable responding, or simply similar responding to these items. Together, these indications suggest this measure of positive reinterpretation coping, although significantly related to growth, may not demonstrate sufficient discriminant validity from personal growth or measure forms of assimilative or accommodative cognitive processing that are hypothesized to facilitate growth outcomes (Joseph & Linley, 2005; Tedeschi & Calhoun, 2004).

In contrast to positive reinterpretation coping, automatic, intrusive thoughts about the death of a loved one had a negative relationship with personal growth. This finding is consistent with previous research of intrusive thoughts and personal growth in a bereaved population (Hogan & Schmidt, 2002), and suggests that the experience of intrusive

thinking inhibits identification of growth outcomes. It may also suggest that whatever contributes to the identification of personal growth outcomes also limits intrusive thoughts. Interpretations of this relationship, however, must be made cautiously, due to concerns about convergent and discriminant validity, given the large magnitude of the correlation between intrusive thoughts and grief symptoms (r = .66). Intrusive thoughts were originally conceptualized from an information-processing model to be a symptom of cognitive distress typically observed in posttraumatic stress disorder (PTSD; Foa, Steketee, & Rothbaum, 1989). In the case of PTSD, intrusive thoughts are hypothesized to emerge when any information or reminder associated with the cognitive "fear network" of the trauma is presented, thereby producing anxiety and other forms of distress. This original conceptualization does not necessarily indicate that the experiencing of unwanted, automatic, intrusive thoughts facilitates the processing or organizing of bereavement-related information. Support for intrusive thoughts as a measure of "cognitive processing" of bereavement information is not provided by the current study. The relationship between intrusive thoughts and grief symptoms in the current study may suggest that intrusive thoughts more accurately represent general bereavement-related distress or posttraumatic stress symptomatology, and should be conceptualized as such in other research studies (e.g. Cadell, Regehr, & Hemsworth, 2003) and models of personal growth (e.g. Hogan & Schmidt, 2002).

Surprisingly, the third measure of cognitive processing, reflective rumination, did not demonstrate a significant relationship with personal growth. The reasons for this finding are not altogether clear; however, it may be hypothesized that construct validity may impact this result. Previous authors have suggested that the items incorporated in

this measure are neutrally-valenced forms of reflection, compared with other items from the Ruminative Responses Scale that reflect more negative forms of rumination (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). However, closer examination of some of the items for this scale suggest that they might relate to endorsement of isolating behaviors as well as reflective thought processes (e.g. "Go away by yourself and think about why you feel this way"). Given this interpretation, it is not surprising that reflection was positively correlated with grief symptoms.

The only study that has demonstrated a positive relationship between this measure of reflection and positive outcomes (e.g. benefit finding) also utilized a repeated-measures, or longitudinal, study design (Nolen-Hoeksema & Davis, 2004). In the present study, the lack of longitudinal data collection is a significant limitation. Given the cross-sectional design, it can only be concluded that reflection and growth are not related when endorsed at the same point in time following bereavement. However, the current study cannot rule out the possibility that current reflective cognitive processing in this bereaved sample could contribute to identification of personal growth at 6 or 12 months in the future. Therefore, future research on growth during the first three years of bereavement should consider the use of longitudinal study designs that might allow comparisons of these constructs across time periods.

One of the main purposes of the current study was to assess the extent to which cognitive processing variables mediate the relationship between social support and growth. The current study did not offer support to models of personal growth that suggest a mediational role for the cognitive processing variables measured here. In fact, reflection was not even considered for mediation due to its lack of relationship with both

social support and growth. Likewise, intrusive thoughts and positive reinterpretation coping were not significantly related to emotional or advice/guidance forms of support, and so these relationships could not be further assessed for mediation. Although criteria for testing mediation were established for three separate models focusing on the support constructs of satisfaction and number of supports, as well as the cognitive processing variables of intrusive thoughts and positive reinterpretation coping, no indirect or mediation effect was established in any of these models.

Although cognitive processing did not mediate the relationship between social support and growth, an incidental finding of the current study is that positive reinterpretation coping appeared to be a powerful mediator of the relationship between grief symptoms and personal growth. Specifically, the significant negative association between grief and growth was substantially reduced, and became non-significant, when positive reinterpretation coping was included in the final step of the multiple regression model. One interpretation of this finding is that the limitations on personal growth imposed by grief symptoms can be reduced through positive reinterpretation coping. In other words, attempts to evaluate and reinterpret the negative circumstances of bereavement in a more positive light may reduce the negative impact of grief symptoms on personal growth. Alternatively, it is possible that positive reinterpretation coping may promote growth outcomes by reducing grief symptoms. At present, no studies have yet examined or confirmed this phenomenon in bereaved or other populations. Unfortunately, this finding is incidental to the current study and should be replicated in future research before further interpretation can be made.

Evaluation of Research Methodology

The lack of a mediation effect for cognitive processing in the relationship between social support and growth is surprising considering the emphasis placed on this process in existing models of personal growth; however, the lack of effect may be attributed to several factors. First, as mentioned previously, the measures of positive reinterpretation coping and intrusive thoughts utilized in the current study raise concerns regarding convergent and discriminant validity when compared with measures of growth and grief symptoms. For example, when the intrusive thoughts subscale was entered into the regression model to assess for mediation, the variable did not account for any additional variance in growth scores after accounting for social support and grief symptoms. The significant overlap between intrusive thoughts and grief symptoms likely accounts for this finding. This finding contradicts previous research that documents intrusive thoughts as a mediator of the relationship between perceived social support and personal growth following bereavement using structural equation modeling procedures (Grief to Personal Growth Model; Hogan & Schmidt, 2002).

Although the reasons for this discrepancy with previous research are unclear, one potential explanation is the differences between studies in sampling and recruitment procedures. Hogan and Schmidt (2002), when examining the grief to personal growth model, recruited a somewhat larger sample (N = 167) and included data from bereaved parents only. The current study attempted to increase generalizability of the findings by including multiple types of loss and relationships to the deceased, which may have reduced power for finding an effect by cancelling effects seen in different subgroups of the sample. It is possible that cognitive processing may or may not mediate the

relationship between social support and growth for different bereavement circumstances, but no studies have yet compared these mediation models for different types of loss. Due to inadequate cell size for each type of loss and relationship to the deceased in this study, each category could not be assessed for mediation separately. As no significant mediation effect for the overall group was obtained in the current study, future studies should consider recruiting or comparing specific bereavement populations.

A third limitation in testing these mediation models is the cross-sectional nature of the data collection in the present study. Although cognitive processing as a mediator has been supported in at least one other cross-sectional test of the personal growth model (Hogan & Schmidt, 2002), it is possible that these cross-sectional procedures limited the ability to find a mediation effect with the variables used in the current study. By nature, posttraumatic and personal growth are thought to develop over time (e.g. Engelkemeyer & Marwit, 2008). Although a significant relationship between time since death and growth was not established during the current study, it is reasonable to hypothesize that each of the constructs of interest, including social support and cognitive processing, may have a different relationship with growth over time. Alternatively, the means by which social support impacts growth following bereavement might also change and develop over time (Tedeschi & Calhoun, 2004). In addition, it is reasonable to hypothesize that social support would precede cognitive processing or that cognitive processing would occur prior to identification of growth outcomes. Each of these hypotheses would require longitudinal and/or experimental studies to test them.

A fourth limitation to the study design that might have impacted power to find a mediation relationship was that participants completed measures at home instead of in a

research lab. These study procedures can lead to a lack of control and precision regarding the assessment procedures. Under these conditions, standardization is minimally regulated. For example, participants may not have completed all of the measures at the same time or asked others for help in answering items. Minimal standardization may have introduced error variance, thereby attenuating relationships between variables and reducing power to find a mediation effect. Unfortunately, mailing procedures were considered necessary given the need to recruit participants from multiple cities in order to obtain a sufficient sample for the current study.

Finally, the methods utilized for measurement of personal growth represent a potential limitation to the current study. Researchers have debated the strengths and limitations of assessing personal growth using objective self-report scales (e.g. Park & Lechner, 2006). The strengths of utilizing these measures include standardized administration and a growing body of literature demonstrating internal consistency, reliability, and convergent and discriminant validity. However, these authors suggest that existing self-report measures of personal growth may elicit positive response bias and socially-acceptable responding due to their face-validity. Others have suggested that reports of personal growth partially represent "illusions" that help to maintain self-esteem (Maercker & Zoellner, 2004; Taylor, 1983). In an attempt to reduce positive response bias in the current study, participants completed multiple self-report measures of personal growth, including a measure that embeds positively-worded growth items with items assessing negative grief symptoms (HGRC; Hogan, Greenfield, & Schmidt, 2001). Both measures loaded highly on the personal growth factor and were significantly correlated with each other ($r = .74$, $p < .001$). Researchers have also recommended the use of open-

ended questions assessing growth to address this problem (Davis, Nolen-Hoeksema, & Larson, 1998; Talbot, 2002) as self-report questionnaires tend to elicit higher, and possibly inflated, rates of growth. In fact, it is reported that 20 to 50% of participants do not report growth when asked a single, open-ended question, whereas almost everyone reports at least one area of growth with the questionnaire format (see Nolen-Hoeksema & Davis, 2004). Unfortunately, this qualitative method suffers from limitations in reliability and may lead participants not to identify or disclose personal growth outcomes without specific prompts. Future research examining models of personal growth may benefit from inclusion of multiple measures of growth, including both objective self-report scales and open-ended qualitative questions.

Implications

The relationship of social support and cognitive processing variables with personal growth has meaningful implications for working with bereaved individuals in a clinical setting. For example, the positive relationship between growth and each of the forms of social support measured in the current study underlines the potential benefits of increasing support following a variety of bereavement circumstances. In order to address issues regarding the size of, and access to, support networks, it may be helpful for individual therapists and group counselors to focus on increasing number of supports (Vachon & Stylianos, 1988). This may involve referral to local hospitals, hospices, religious organizations, and other local agencies that provide bereavement support groups and access to mentors and other individuals who have experienced similar losses.

Considering the finding of the current study that emotional support from family members had a significantly larger relationship to growth than emotional support from

friends, a counselor may also consider the potential benefits of working directly with family members, as in family therapy, in order to facilitate provision of emotional support (see Matheson, 2007, for a review). Interventions attempting to improve support satisfaction, such as addressing negative beliefs and attitudes about existing support, may also be useful in facilitating growth outcomes. At present, there are no available research studies examining the effect of bereavement support groups or specific therapeutic interventions designed to increase social networks or perceived support on personal growth outcomes.

Regarding cognitive processing, clinicians and support group facilitators may also derive important clinical implications from this study. Applying the results from the current study, clinicians may be able to facilitate growth by attempting to reduce the intensity and frequency of automatic and intrusive forms of cognitive processing, as well as other significant grief symptoms. Considering the potential overlap of intrusive thoughts and other posttraumatic symptoms with many bereavement circumstances, particularly for violent or sudden losses (Murphy, Johnson, & Lohan, 2002), this study emphasizes the importance of initial screening for these symptoms in a clinical context. With regard to positive reinterpretation coping, clinicians may consider the potential benefits of interventions that increase or improve attempts to reevaluate the circumstances of the loss, focus on the individual's positive reframing of their bereavement circumstances, and facilitate approach coping styles (Malkinson, 2007). Of course, simplistic but well-meaning attempts to address these coping styles (e.g. "Just think about all the good things that have happened since your loss.") run a significant risk of alienating bereaved individuals and minimizing their distress following their loss.

Clinicians must be sensitive to deliver such interventions with respect and acknowledgment of the individual's experience. It is possible that receiving these interventions in the context of experiential similarity, such as in bereavement support groups or family therapy, may increase their ability to facilitate growth; however, this remains a question for further study.

Future Directions

The current study provides no evidence that positive reinterpretation coping, personal reflection, and intrusive thoughts mediate the relationship between the types of social support measured in the current study and personal growth. However, it is difficult to draw conclusions regarding the role of cognitive processing presented by models of growth (Joseph & Linley, 2005; Tedeschi & Calhoun, 2004) due to the previously mentioned limitations in the measurement of cognitive processing in the current study. Currently, there are no acceptable measures that directly assess the accommodative and assimilative cognitive processes discussed by Tedeschi and Calhoun (2004) and Joseph and Linley (2005) in their models of growth. Future studies should attempt to develop more suitable measures of these constructs, which may involve informant ratings as well as self-reports. The sole use of self-report measures in the current study may have induced positive response bias (see Nolen-Hoeksema & Davis, 2004), and the development of multiple measures utilizing multiple informants and domains of functioning would likely help to reduce this phenomenon. These measures may also incorporate behavioral measures of cognitive processing, such as those utilized by the written disclosure paradigm (Linguistic Inquiry and Word Count; e.g. Pennebaker, Zech, & Rime, 2001). This measure, which counts the frequency of cognitive processing and

other variables in written narratives, might provide a less face-valid measure of the constructs of interest, but researchers have yet to establish its validity as a measure of cognitive processing similar to those utilized in models of growth. In addition to these measures, alternative conceptualizations of cognitive processing that have appeared in stress-buffering models have yet to be considered in growth models, including modification of stress appraisal, transmission of new alternative schemas, increasing self-esteem and self-efficacy, enhancing beliefs about personal control, altering world assumptions, and enhancing personal identity. Existing models of growth should be expanded to include hypotheses incorporating these constructs, and research should continue to examine these constructs as potential mediators of the relationship between social support and personal growth.

Appendix

Demographic Questionnaire

About you:

What is your gender?
___Female ___Male

What is your age? ___ Years

Marital status?
___ Single
___ Married or equivalent
___ Divorced/Separated
___ Widowed

Racial/Ethnic identity?
___ Caucasian
___ African American
___ Asian American
___ Hispanic/Latino/a
___ Other
Please Specify:

What is the highest grade in school you have completed? _____

Did you graduate (check all that apply)?
___ High school
___ College (Degree_____)
___ Graduate (Degree _____)
___ Other_____

Do you currently attend a support group?
____Yes ____No

Have you attended a support group in the past?
____Yes ____No

If so, how many times have you attended? _____

About your deceased family member:

Gender?
___ Female _____Male

What was your family member's age at time of death? ___ Years

When did your family member die?
_____ Date (Month/Year)

What was the cause of death?
_____Illness/Health
_____Accident
_____Homicide
_____Suicide
_____Other:
Please Specify:

What was your relationship to the deceased?
_____Parent
_____Son/Daughter
_____Spouse/Partner
_____Sibling
_____Other:
Please Specify:

Please briefly describe the circumstances surrounding your family member's death:
_____
_____
_____

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